

WHAT IS CLAIMED IS:

1. An underinflation detector for a four-wheeled vehicle comprising:
a rotational speed sensor that detects rotational speeds of two front
5 wheels and two rear wheels of the vehicle; and
a controller that determines that inflation pressure of a tire of any of the
wheels has decreased, if a parameter calculated from outputs of the rotational speed
sensor exceeds a threshold, wherein a first value of the parameter is calculated using a
disparity between a front-wheel rotational speed difference and a rear-wheel rotational
10 speed difference; and
wherein correction is made to the first value of the parameter to obtain a
second value of the parameter to be compared with the threshold by canceling a
deviation of one of the front-wheel rotational speed difference and the rear-wheel
rotational speed difference caused by a steering operation which a driver performs so
15 as to cancel the other of the front-wheel rotational speed difference and the rear-wheel
rotational speed difference arising due to underinflation of the tire.
2. An underinflation detector according to claim 1, wherein the correction
to the first value of the parameter is made by retrieving a correction value from a map
20 with a yaw rate calculated from the rotational speed difference arising due to the
underinflation of the tire, and multiplying the yaw rate by the correction value.

3. An underinflation detector according to claim 1, wherein the correction to the first value of the parameter is made by retrieving a correction value from a map with a first yaw rate calculated from the rotational speed difference arising due to the underinflation of the tire, and dividing a second yaw rate calculated from the rotational speed difference caused by the steering operation by the correction value.

4. An underinflation detector according to claim 1, wherein the correction to the first value of the parameter is made by calculating a yaw moment acting on one of a front axle shaft and a rear axle shaft with an increase of a rolling resistance arising due to the underinflation of the tire, obtaining from the yaw moment a yaw rate deviation corresponding to the increase of the rolling resistance, and subtracting the yaw rate deviation from a yaw rate calculated from the rotational speed difference arising due to the underinflation of the tire.

5. An underinflation detector according to claim 1, wherein the correction to the first value of the parameter is made by calculating a yaw moment acting on one of a front axle shaft and a rear axle shaft with an increase of a rolling resistance arising due to the underinflation of the tire, obtaining from the yaw moment a yaw rate deviation corresponding to the increase of the rolling resistance, and adding the yaw rate deviation to a yaw rate calculated from the rotational speed difference caused by the steering operation.

6. An underinflation detector according to claim 1, wherein a wheel diameter ratio is calculated from the first value of the parameter to which the correction has been made; and

wherein the second value of the parameter to be compared with the threshold is obtained by multiplying the wheel diameter ratio by normalized values of indicators of straight-ahead driving of the vehicle, and taking moving averages thereof.